

CLAIMS

1. A communication system on an IP network (50) between an automation equipment (10) comprising at least one processing unit capable of running a program (20) to provide automation functions and one or more
5 remote devices (30) running a computer program or group of computer programs, characterised in that the communications system is based on the Simple Object Access Protocol (SOAP) for the purpose of providing the remote device (30) with supervision, display, control,
10 configuration or programming functions of the automation equipment (10), and in that the communications system comprises, in the automation equipment (10), at least one WEB service (21) or one WEB client (22) which are capable of interacting with
15 the program (20) of the automation equipment (10), of decoding messages received (51, 54) from the IP network (50) encoded according to the SOAP protocol and of encoding according to the SOAP protocol messages to be sent (52, 53) on the IP network (50).
- 20 2. A communication system according to claim 1, characterised in that an automation equipment (10) includes at least one WEB service (21) able to receive from the IP network (50) requests (51), coming from at least one WEB client application (31) contained in a
25 remote device (30) and of sending on the IP network (50) responses (52) to the WEB client application (31) of the remote device (30).
3. A communication system according to claim 1, characterised in that an automation equipment (10)

includes at least one WEB client (22) able to send on the IP network (50) requests (53) to at least one WEB server application (32) contained in a remote device (30) and of receiving from the IP network (50) responses (54), coming from the WEB server application (32) of the remote device (30).

4. A communication system according to claim 2, characterised in that a service description document (61) describes the capacities of one or more WEB services (21) implanted in an automation equipment (10), this service description document (61) being accessible for a remote device (30, 30") either from its local resources, or from remote resources identified by a URL, URI or IP address.

5. A communication system according to claim 4, characterised in that the service description document (61) complies with a service description language referring to the SOAP protocol or to the HTTP, HTTPS protocol and providing a grammar based on the eXtensible Markup Language (XML).

6. A communication system according to claim 5, characterised in that the service description document (61) may contain one or more URL, URI or IP addresses of one or more WEB services (21).

7. A communication system according to claim 6, characterised in that the service description document (61) complies with the Service Description Language (SDL).

8. A communication system according to claim 6, characterised in that the service description document (61) complies with the SOAP Contract Language (SCL).

9. A communication system according to claim 6, characterised in that the service description document (61) complies with the Network Accessible Service Specification Language (NASSL).

5 10. A communication system according to claim 6, characterised in that the service description document (61) complies with the Web Services Description Language (WSDL).

10 11. A communication system according to claim 6, characterised in that several service description documents (61) complying with different service description languages can describe the capacities of a same WEB service (21).

15 12. A communication system according to claim 11, characterised in that the service description document (61) is compressed in a standard compression format for files and documents.

20 13. A communication system according to claim 11, characterised in that the service description document (61) of an automation equipment (10) is stored in storage means (60) located in the automation equipment (10).

25 14. A communication system according to claim 11, characterised in that the service description document (61) of an automation equipment (10) is stored in storage means (60') located in a remote device (30').

30 15. A communication system according to claim 11, characterised in that a generator (62) is capable, following a request emanating from a remote device (30, 30"), of constructing a service description document (61) dynamically, describing the capacities of one or

more WEB services (21) implanted in an automation equipment (10).

16. A communication system according to claim 15, characterised in that the generator (62) of a service description document (61) of an automation equipment (10) is accessible, for a remote device (30, 30"), via a URL, URI or IP address.

17. A communication system according to claim 16, characterised in that the generator (62) of a service description document (61) of an automation equipment (10) is stored in storage means (60) located in the automation equipment (10) or in storage means (60') located in a remote device (30').

18. A communication process on an IP network (50) between an automation equipment (10) running a program (20) to provide automatic control functions and a remote device (30) running a computer program or group of computer programs, the purpose of the communication process being to provide the remote device (30) with supervision, display, control, configuration or programming functions of the automation equipment (10), characterised in that the communication process is based on a communications system based on the SOAP protocol and comprises the following stages:

- A service discovery stage (A) wherein a computer application (33), running in the remote device (30) or in another remote device (30"), sends a read request (55) on the IP network (50) in order to receive, in a response (56), a service description document (61),
- A development stage (B) wherein, by means of the service description document (61), it is possible to

develop manually or automatically, all or part of a WEB client application (31) and/or a WEB server application (32) in the remote device (30) so as to be able to communicate with a WEB service (21) and/or a WEB client (22) of the automation equipment (10) respectively.

- A communication stage (C) between a WEB client application (31) and/or a WEB server application (32) of the remote device (30) and a WEB service (21) and/or a WEB client (22) of the automation equipment (10) on the IP network (50), by means of requests (51, 53) and responses (52, 54) complying with the SOAP protocol.

19. A communication process on an IP network (50) between an automation equipment (10) running a program (20) to provide automatic control functions and a remote device (30) running a computer program or group of computer programs, the purpose of the communication process being to provide the remote device (30) with supervision, display, control, configuration or programming functions of the automation equipment (10), characterised in that the communication process is based on a communications system based on the SOAP protocol and comprises the following stages:

- A service discovery stage (A) wherein a computer application (33), running in the remote device (30), sends a read request (55) on the IP network (50) in order to receive, in a response (56), a service description document (61),

- A communication stage (C) between a WEB client application (31) and/or a WEB server application (32) included in the computer application (33) of the remote device (30) and a WEB service (21) and/or a WEB client

(22) of the automation equipment (10) on the IP network (50), by means of requests (51, 53) and responses (52, 54) complying with the SOAP protocol.

5 20. A communication process according to one of claims 18 or 19, characterised in that the request (55) contains a URL, URI or IP address which marks either a service description document (61), or a generator (62) capable of constructing a service description document (61) dynamically.

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